

Status Report on Boreal Owl Surveys in Southwestern Montana, 1989.

by

P. D. Mullen

for the

Montana Natural Heritage Program
1515 East Sixth Avenue
Helena, MT 59620

and

USDA Forest Service
Beaverhead and Bitterroot National Forests
Box 238
Wisdom, MT 59761

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SUMMARY

Song-playback surveys conducted in forested habitats of southwestern Montana during the winter of 1989 yielded 29 owl responses. Nine boreal owl responses were heard, representing eight different owls, during seven of the thirty surveys. Boreal owls were heard in either Picea englemanii, Abies lasiocarpa, Pseudotsuga menziesii, or Pinus contorta forest types between 6,000 and 7,800 ft elevation. Five and three owls were heard on the west and east sides of the Continental Divide respectively. Owl calling sites were between 12 and 120 ft from forest openings and within 300 ft of water. Suggestions are made for future research on boreal owls to comply with monitoring and management regulations defined in the National Forest Management Act of 1976.

Analysis of stand structure at primary calling sites indicated number of canopy levels ranging from one to four with canopy closure estimates from 40 to 80 percent. All stands contained from 2 to 10 snags per acre. Ages of dominant trees ranged from 80 to 200 years, with DBH values between 11 and 24 inches and heights from 54 to 90 feet.

INTRODUCTION

The boreal owl (Aegolius funereus) is a small, nocturnal owl found in coniferous forests of northern North America and Eurasia (AOU 1983, Clark et. al. 1987). Although generally secretive, the male boreal owl is often vocal during the early breeding season (Feb.- May), and can be located using nocturnal surveys (Palmer 1987). Previous studies indicate that only potentially breeding males call (Hayward et al. 1987), implying that owl calling activity indicates the presence of breeding populations.

The status of the boreal owl in southwestern Montana is poorly known, though its presence has been established on a regional basis by confirmed nesting studies in Colorado (Palmer and Ryder 1984) and Idaho (Hayward and Garton 1983). In southwestern Montana during the winter of 1984 four singing males were heard in the Big Hole Valley during a coordinated survey effort (Hayward et al. 1987). Holt (1986) located boreal owls in west-central Montana along the Idaho border. No nests have been found to date.

Survey results in the Rocky Mountain Region indicate that boreal owls in Montana occur in mature spruce (Picea engelmannii)-fir (Abies spp.) forest types greater than 5,000 ft elevation, which at times may be associated with lodgepole pine (Pinus contorta)/wet meadow complexes (Holt and Hillis 1987).

The Region 1 of the United States Forest Service (U.S.F.S) lists the boreal owl as a Sensitive Species, and thus is required to monitor their status and population trends on forest lands under the National Forest Management Act (NFMA) of 1976 (16 U.S.C. 1600). Additionally, NFMA requires that suitable habitat be maintained to support viable boreal owl populations throughout their range on Forest Service Lands.

During the winter of 1989 a cooperative study of the boreal owl was initiated between the Beaverhead and Bitterroot National Forests and the Montana Natural Heritage Program.

Primary objectives of this study were to develop a better understanding of the distribution, habitat requirements, and population status of the boreal owl in southwestern Montana. This project is the first of four years, designed to gather sufficient baseline data on boreal owls. These data will subsequently be used in population monitoring, viability assessment, and forest planning. This report is a summary of the efforts during 1989 to document the occurrence of boreal owls in southwestern Montana on portions of the Beaverhead and Bitterroot National Forests.

STUDY AREA

The study area consists of portions of Beaverhead, Deerlodge, Silverbow, and Ravalli Counties along the Continental Divide (Fig. 1). Elevations in the area range from about 4,500 ft to 8,500 ft with a variety of forest cover types, aspects, and slopes. Lower elevation sites on the west slope of the Continental Divide in Ravalli County are dominated by ponderosa pine (Pinus ponderosa) and Douglas fir (Pseudotsuga menziesii). Subalpine fir (Abies lasiocarpa) and lodgepole pine occur at higher elevations along the Divide. Engelmann spruce is found in cool moist sites, primarily along creeks and draws in the subalpine zone throughout the area.

Douglas fir stands also occur along dry foothills in the eastern portion of the study area, east of the Continental Divide, while lodgepole/subalpine fir dominate the higher elevation sites. The remainder of the study area is primarily lodgepole/subalpine fir cover types with spruce/subalpine fir occurring in wet areas, draws, and around wet meadow complexes. Aspen (Populus tremuloides) and willow (Salix spp.) are present in isolated patches throughout the area as riparian or paloustrian species

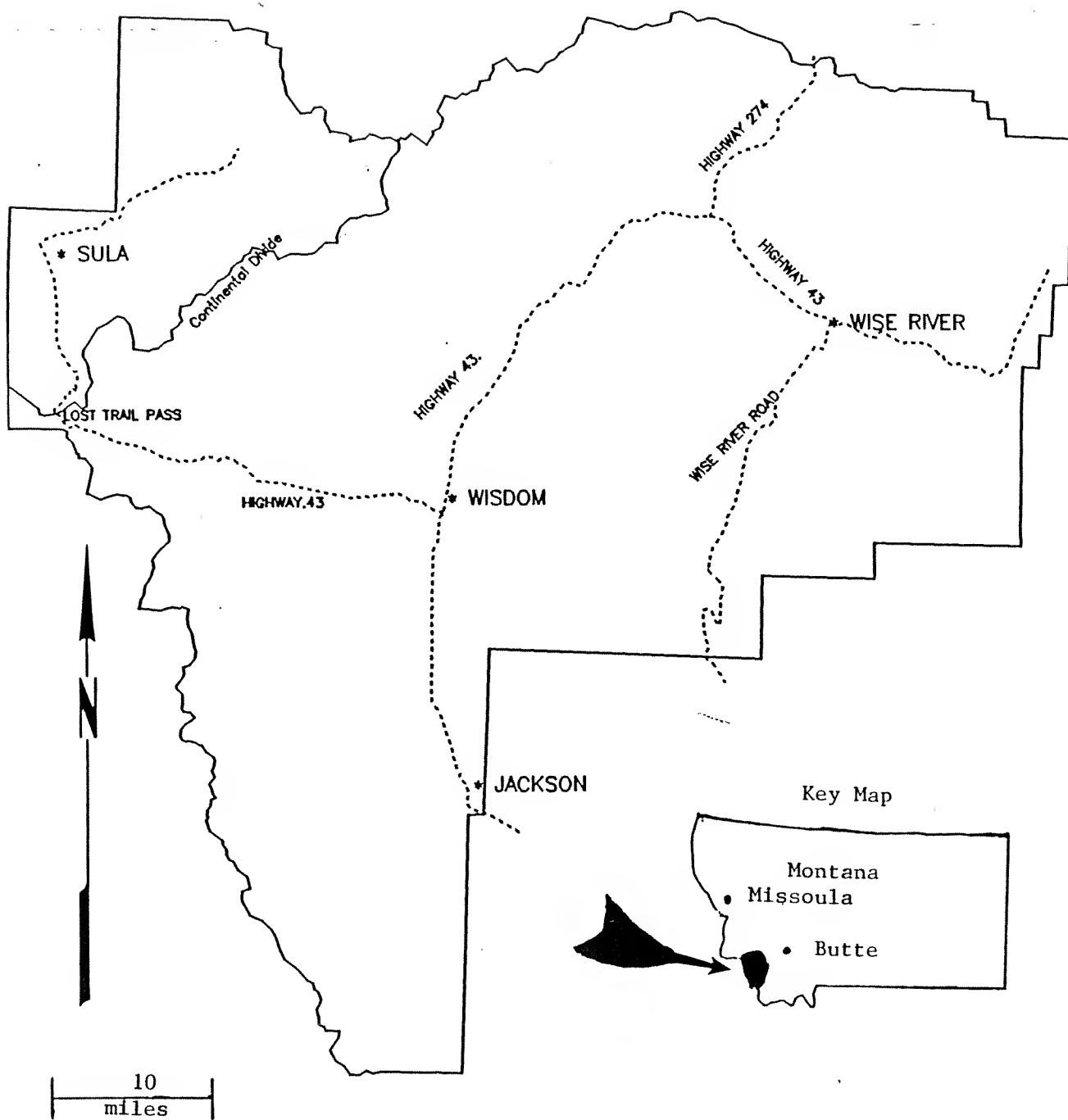


Figure 1. Map of the study area in Southwestern Montana.

METHODS

Owls were surveyed using the song playback technique (Fuller and Mosher 1981) from vehicle and snowmobile along survey routes from 24 February to 4 May, 1989. Survey routes were selected to include a variety of forest types and elevations. See Figure 2 for route delineations and Table 1 for a list of routes by District.

There were twenty-five survey routes which included areas of three Ranger Districts on two National Forests. Wise River and Wisdom Ranger Districts were included on the Beaverhead National Forest, and Sula Ranger District on the Bitterroot National Forest.

Surveys started one half hour after dusk and lasted approximately four to five hours or until 2300 or 2400 hours. Routes were selected to be eight to ten miles long with playback stations between one half and one mile apart depending on topographic and/or habitat variation. At each station I listened for calling owls for two to three minutes, played one species' call for two to three minutes, and listened again for two to three minutes. This was repeated three times per station. Boreal calls were played most often, but occasionally great gray (Strix nebulosa) or saw-whet owl (Aegolius acadicus) calls were played at alternating stations. Survey report forms were completed for each survey attempt, and owl observation forms filled out for routes where owls were heard. See Appendix I for sample report and observation forms. Approximate locations of owl responses were mapped on U.S.G.S. Topographic maps (7.5 min.). These sites were then visited for habitat analysis during the summer months of 1989.

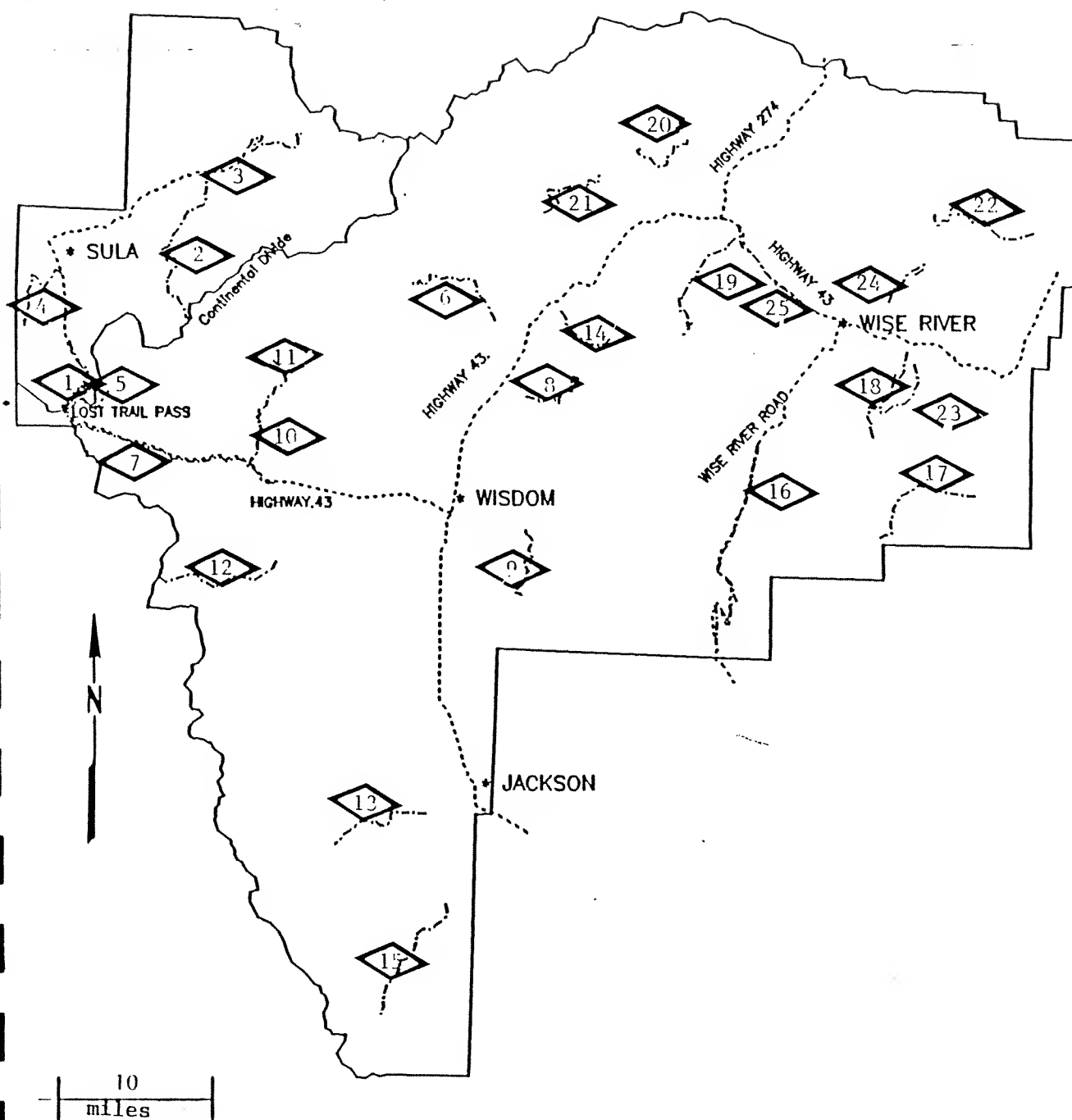


Figure 2. Owl survey routes within the study area, 1989-1990.

Table 1. Owl survey routes by Forest District and length, 1989.

ROUTE NAME	DISTRICT	LENGTH(mi)	N	TOTAL SURVEYED(mi)
Lost Trail	Sula	8	2	16
Meadow Cr.	Sula	13	1	13
Lick Cr.	Sula	7	1	7
Andrews Cr.	Sula	7	1	7
Gibbon Trail	Sula	8	1	8
Howell Cr.	Wisdom	10	2	20
Chief Joseph	Wisdom	15	1	15
Doolittle	Wisdom	8	1	8
Steel-Fox	Wisdom	9	1	9
Johnson Cr.	Wisdom	10	1	10
Upper Johnson	Wisdom	6	1	6
Big Hole Pass	Wisdom	8	1	8
Miner Lake	Wisdom	8	1	8
Squaw Cr.	Wisdom	7	1	7
Skinner Meadow	Wisdom	6	1	6
Wise River	Wise River	15	2	30
Trapper Cr.	Wise River	9	3	27
Triangle	Wise River	11	1	11
Bryant Cr.	Wise River	10	1	10
East LaMarche	Wise River	8	1	8
Fishtrap	Wise River	8	1	8
Divide Cr.	Wise River	8	1	8
Quartz Hill	Wise River	8	1	8
Jerry Cr.	Wise River	6	1	6
Highway 43	Wise River	8	1	8
TOTAL				281
N = Number of trips				

HABITAT ANALYSIS

Habitat analysis consisted of a site description of the area around each owl response site. Macro-habitat parameters recorded at each site were: elevation, aspect, slope percent, distance to nearest opening (clearcut, meadow, or park >1 acre), distance to water, distance to nearest disturbance source (e.g. road, highway, recreation area). Micro-habitat parameters recorded included forest type, number of canopy levels, percent canopy closure, number of snags per acre, basal area of dominant tree species, age, mean diameter at breast height (DBH), and mean height of dominant tree species.

In an attempt to compensate for possible owl location error, a second adjacent stand was chosen at each site in a direct line with the listening point from the primary location for identical analysis. Though this method did not increase the accuracy of the habitat analysis, it did serve to broaden the potential habitat types in which owls may have been calling. In subsequent survey years, attempts should be made to locate singing males to precise stands, thereby increasing the validity of the data.

Calculations of basal area, number of snags per acre, and percent canopy closure were based on estimates concurrent with standard U.S.F.S. stand examination procedures.

Median value and range for each habitat parameter were calculated for primary, secondary, and total stands analyzed.

RESULTS

Thirty surveys were conducted during the period, covering 272 miles. Approximately 51 miles were covered on the Sula District, 97 on the Wisdom District, and 124 on the Wise River District (Table 1).

Twenty-nine owl responses were heard of which nine were boreals. The remaining species and numbers heard were saw-whet (6), great gray (2), and great horned owls (Bubo virginianus) (12). The nine boreal responses were heard in seven different locations (Appendix II). Results suggest that of the nine boreals heard, eight were different owls (See owl observation forms in Appendix III).

Of the eight different boreal owls heard, five were located on three survey routes on the Sula District. Two were heard on the Meadow Creek route, two on the Lost Trail Pass route, and one on the Gibbon Trail route. Two were heard on the Wisdom District: one on the Skinner Meadows route and one on the Chief Joseph Pass route. The one boreal located on the Wise River District was heard on the Bryant Creek route. Seven of the nine total responses were elicited by song playback, while the remaining two owls were calling prior to any taped playback. Specific responses are described on owl observation forms found in Appendix III.

An estimate of boreal responses per mile of survey effort yields approximately one boreal owl response per 34 mi of survey. As an estimate of survey effort by forest district, the data yield approximately one response per 10 mi for the Sula District routes, one response per 48 mi for the Wisdom routes, and one response per 124 mi for the Wise River routes.

Habitat Characteristics

Boreal owl calling sites located during the survey occurred between 6,000 ft and 7,800 ft elevation. All sites were found to be in spruce/subalpine fir, lodgepole/subalpine fir, Douglas fir/lodgepole, or lodgepole/spruce forest types. Primary sites were within 120 ft of forest openings and within 320 ft

Table 2. Macro-habitat characteristics of Boreal Owl calling sites, 1989.

SITE NAME		ELEVATION	ASPECT	SLOPE(%)	DISTANCE OPENING	DISTANCE WATER	DISTANCE DISTURBANCE
Skinner	1	7000	210	10	160	950	950
Meadows	2	7000	180	10	35	150	3100
Meadow	1	6500	120	45	320	320	320
Creek	2	6600	90	50	250	380	250
Mink	1	6000	90	20	95	35	95
Creek	2	6000	90	30	95	160	95
Lost	1	6800	70	60	250	65	250
Trail	2	6800	70	50	330	250	330
Joseph	1	7100	200	20	35	95	480
Creek	2	7100	90	20	65	125	330
Bryant	1	7800	60	30	65	95	3200
Creek	2	7800	10	30	125	160	3200
Ski Hill	1	7100	95	0	95	65	160
	2	7100	90	0	125	65	160
Median (range)		6800 (6000-7800)	110 (10-210)	30 (0-60)	175 (35-330)	500 (35-950)	1700 (95-3200)
	1	6800 (6000-7800)	135 (60-210)	30 (0-60)	175 (35-330)	500 (35-950)	1700 (95-3200)
	2	6800 (6000-7800)	95 (10-180)	25 (0-50)	175 (35-330)	220 (65-380)	1700 (95-3200)

Table 3. Micro-habitat characteristics of Boreal Owl calling sites, 1989.

SITE NAME		FOREST TYPE	CANOPY LEVELS	%CANOPY CLOSURE	SNAGS/AC	BASAL AREA/AC	AGE	DBH (IN.)	HEIGHT (FT.)
Skinner Meadows	1 2	LP/SAF LP/SP	1 3	40 60	2 4	140 160	80 150	11 22	54 65
Meadow Creek	1 2	LP/DF LP/SAF	2 1	40 50	5 2	30 111	200 70	24 8	85 55
Mink Creek	1 2	SAF/SP SAF/DF	4 2	80 60	4 2	150 44	110 90	18 12	80 70
Lost Trail	1 2	DF/SP DF/SAF/LP	4 2	70 60	5 2	85 125	200 130	20 12	90 70
Joseph Creek	1 2	LP/SAF/SP LP/SAF	3 2	70 50	3 2	125 44	110 120	12 12	60 60
Bryant Creek	1 2	SP/SAF LP/SAF	3 2	70 50	5 2	33 40	140 110	12 8	75 55
Ski Hill	1 2	SP/SAF LP/SAF/SP	2 2	40 50	10 4	80 125	200 150	20 12	60 60
Median (range)			2.5 (1-4)	60 (40-80)	6 (2-10)	95 (30-160)	135 (70-200)	16 (8-24)	72 (54-90)
Primary	1		2.5 (1-4)	60 (40-80)	6 (2-10)	90 (30-150)	140 (80-200)	17.5 (11-24)	72 (54-90)
Secondary	2		2 (1-3)	55 (50-60)	3 (2-4)	100 (40-160)	110 (70-150)	15 (8-22)	62.5 (55-70)
LP-Lodgepole pine. SAF-Subalpine fir. DF-Douglas fir. SP-Engleman spruce.									

Table 4. Types of forest openings nearest Boreal Owl calling sites, 1989.

SITE NAME		TYPE OF OPENING
Skinner	1	Dry Park
Meadows	2	Mesic Meadow
Meadow	1	Clearcut/road
Creek	2	Clearcut/road
Mink	1	Road
Creek	2	Road
Lost	1	Road
Trail	2	Road
Joseph	1	Mesic Meadow
Creek	2	Mesic Meadow
Bryant	1	Clearcut
Creek	2	Clearcut
Ski Hill	1	Wet Meadow/Ski Hill
	2	Wet Meadow/Ski Hill

of water or wet meadow areas. Slopes ranged from zero to 60 percent for primary sites with aspects from 60 to 210 degrees. Distances from potential human disturbance ranged from 100 ft to just under 1 mile (Tables 2,3). Types of forest openings nearest calling sites included clearcuts, parks, meadows, and roads (Table 4).

Analysis of stand structure at primary sites indicated number of canopy levels ranging from one to four with canopy closure estimates from 40 to 80 percent. All stands contained from 2 to 10 snags(> 8") per acre. Ages of dominant trees ranged from 80 to 200 years, with DBH values between 11 and 24 inches and heights from 54 to 90 feet (Table 3).

DISCUSSION

The presence of boreal owls in the study area during the breeding season is an indication that, though no nests were found, boreals are present in southwestern Montana as potential nesters, and can be monitored as such in the future. Data from this survey should be considered as evidence of boreal activity, and not as a basis for owl density calculations or population levels within the study area.

Boreal owls were heard in primarily high elevation (6,000-7,800 ft) spruce/subalpine fir, subalpine fir/lodgepole, and Douglas fir/subalpine fir forest types. This is consistent with findings in the Bitterroot Divide (Holt and Hillis 1987) and central Idaho (Hayward et al. 1984). Though surveys covered additional forest types, including ponderosa pine and Douglas fir/juniper (Juniperus spp.) at lower elevations, no responses were heard in these forest types.

Forest openings nearest boreal calling sites were man-made at five of the seven sites (Table 4). G. Hayward (Pers. commun.) suggested that man-made

openings (i.e. clearcuts) may in some cases be "beneficial" to boreals because they create edge habitat which the owls use for hunting. It should be noted however, that man-made openings are often accompanied by the potential for human disturbance such as road traffic or firewood cutting, which may not benefit the owls. The potential also exists for the invasion/colonization of these openings by competing owl species such as Great horned, saw-whet, or barred owls (Strix varia). Such invasions may have a negative effect on boreal owl management goals. Additional research is needed to clarify the relationship between owl habitat use and forest management.

Regional variation of both calling activity of male boreals and breeding success of nesting pairs has been noted (Hayward et al. 1986). These variations are apparently a direct result of fluctuations of prey populations and/or availability. These findings are particularly significant in their application to the design and duration of owl surveys and monitoring.

Short term (one-two years) preliminary surveys cannot take into account yearly fluctuations in calling activity, which could influence management activities in the area with potentially drastic results. Additionally, as this study shows, an apparent regional difference in owl densities exists between the east and west sides of the Continental Divide. If management were directed solely by this one year study, without taking into account the possibility of regional variation in calling rates, very little management for boreal owls would take place on the eastern Districts due to few or no owls found there. Additional survey years may result in very different results, and should serve to assemble the necessary data describing boreal owl distribution and abundance over the study area.

As a suggestion for further research, boreal owl surveys should be continued in southwestern Montana with initial emphasis on nest location

attempts. In addition to new survey routes, repeat surveys should be made in spruce/fir forest types using routes covered by this study. Nest location and nest site analysis are important so that management guidelines for these areas can incorporate boreal habitat requirements for NFMA compliance.

Site specific data on seasonal and yearly boreal habitat requirements are needed on a long term basis to ensure a viable boreal population on forest lands in the region.

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APPENDIX I

Sample Survey Report and Owl Observation data forms.

SURVEY REPORT FORM

Party Members

P. Mulla
W. A. Mulla

Date 3-30-89

Target Species

(if any)

Route Name

TRAPPER CREEKLong EAREDScreech. Owl

Route location:

County BanwaitForest BeaverfootDrainage TRAPPERElevation 7000District Wise RiverRepeat Visit ? Y N

Route Description

1 mi. Goose Ranch / Glendale up TRAPPER Creek Road
approx. 8 miles

Distance: 6 milesStart time: 1930Means of travel: VehicleFinish time: 2200

(auto, ski, etc.)

Weather (at end of survey)

Temperature: 35°Precipitation (describe): NoneCloud cover: 50%Wind: light VariableSnow depth: 2-4'

Species encountered (if any, use Owl Observation Form)

species

#

Broad Throated1

SURVEY REPORT FORM

Party Members

P. Muller
L. Muller

Date 1/23-89

Target Species
(if any)

Route Name

MINER LAKE

Route location:

County Beaverhead Forest Beaverhead

Drainage MINER Elevation 6500-7500 District WISDOM

Repeat Visit ? Y (N)

Route Description

From Forest BND9 on Miner Lakes Road, up Road
3 Miles

Distance: 3 miles

Start time: 2030

Means of travel: Snow Mobile
(auto, ski, etc.)

Finish time: 2030

Weather (at end of survey)

Temperature: 20°

Precipitation (describe): None

Cloud cover: Clear

Wind: light

Snow depth: 2-3'

Species encountered (if any, use Owl Observation Form)

species #
Great Horned Owl 2

SURVEY REPORT FORM

Party Members

P. Miller
J. EASLEY
G. EASLEY

Date 4-06-89

Target Species

(if any)

Route Name

Divide Creek

Boreal
Snowshoe

Route location:

Drainage Divide Cr.

County Silver Bow

Forest Bowmanland-Deer Lodge

Elevation 600-700 ft District Wise River

Repeat Visit ? Y NO

Route Description

From Two miles up Divide Creek Road at Feely exit on Highway
15 - Eight miles up Divide Creek Road to Upper Jerry Creek
Saddle,

Distance: 8 miles

Means of travel: Snow Mobile
(auto, ski, etc.)

Start time: 2045

Finish time: 2315

Weather (at end of survey)

Temperature: 25°

Cloud cover: None

Snow depth: 2-4 ft.

Precipitation (describe): None

Wind: Busty to 20 mph

Species encountered (if any, use Owl Observation Form)

species #

None.

SURVEY REPORT FORM

Party Members

P. Muller
D. McKnight

Date 4-07-89

Target Species

(if any)

Route Name

Wise River Road

Boreal

Great Gray

Route location:

County Beaverhead

Forest Beaverhead

Drainage Wise River Elevation 6000-7200 District Wise River

Repeat Visit ? ☒ N

Route Description

From Pottengail Road on Wise River Road, up Wise River to Mono Park.

1 * Breakdown of machine - Route from Lacey Creek to Pottengail C

Distance: 7 miles

Start time: 2050 7 miles -

Means of travel: Snow Machine
(auto, ski, etc.)

Finish time: 2250

Weather (at end of survey)

Temperature: 35°

Precipitation (describe): None

Cloud cover: Clear

Wind: Light + Variable

Snow depth: 2-5 ft.

Species encountered (if any, use Owl Observation Form)

species #

None

2 * TAPE Player Broke During Survey - continued ~~was~~ safely listened.

SURVEY REPORT FORM

Party Members

P. MullenJ. JonesDate 4/12/89

Target Species

(if any)

Boreal

Route Name

Squaw Cr.B. C. Gray

Route location:

County BeaverheadForest BeaverheadDrainage SquawElevation 6500District WisdomRepeat Visit ? Y (N)

Route Description

From Rd. 1st. 1 mile up Squaw cr. from Hwy 48-

7 miles up Squaw cr. Road & trail

Mostly Bottoms - willow / sage / grasses w / steep hills
timbered side hills in southDistance: 7 miStart time: 2045Means of travel: snow mobileFinish time: 2230

(auto, ski, etc.)

Weather

Temperature: 30°Precipitation: NoneCloud cover: NoneWind: Light variable - 5-10 mphSnow depth: 3-5'

Species encountered (if any, use Owl Observation Form)

species

Great horned # 1

OWL OBSERVATION FORM

Party Members

J. Mullen

Date 4/12/89

Route Name Incidental

Repeat Observation ?

Y

(N)

Species Saw whet

Number present 1

Time 0200

to 0230

Location:

Township 2N Range 12W Section 28 1/4 NW Elev 6100

UTM (Optional) 336.3 E 5083.7 N Slope 20-40% Aspect N/NW

County: Silver Bow

Forest: Beaverhead

Drainage: Crow Cr.

District: Wise River

Describe Observations: (bark, territorial call, sighting, etc.)

Repeated calling

Describe Location:

Small Ridge - mid top where Mill Creek Highway and Hwy. 43 Jct.

Describe Habitat: (canopy cover, comm. type, stand age, etc.)

Mature Lodgepole/ABLA Near Sagebrush Meadows at upper end of small Ridge East of Mill Creek Highway Hauler.

Describe Land use/management:

BLM/Private

Comments:

LINCOLN Gulch Quadrangle

SURVEY REPORT FORM

Party Members

P. Muller

Date 4/13/89

Target Species

(if any)

Route Name

Andrews Cr.

Boreal

Sawwhet

Route location:

County _____

Forest Bitterroot

Drainage Andrews

Elevation 4600

District Sula

Repeat Visit ? Y ☒ N

5300

Route Description

From Sula Ranger Sta. on Hwy 93. ~~to~~ West up Andrews Cr. Road 6 miles. Some cut-over areas mostly steep slopes - Dry P/Pine - Fir - E/BASI slopes.

Distance: 6 mi

Start time: 2055

Means of travel: Auto

Finish time: 2220

(auto, ski, etc.)

Weather (at end of survey)

Temperature: 30°

Precipitation (describe): None

Cloud cover: clear

Wind: light

Snow depth: 2-4'

Species encountered (if any, use Owl Observation Form)

species

#

C. Horned 1

SURVEY REPORT FORM

Party Members

P. Muller
P. Olson

Date 4/17/89

Target Species

(if any)

Route Name

Quartz HillBorealSawwhet

Route location:

Drainage Quartz HillCounty BrownForest BeaverheadElevation 6000District Wise River

Repeat Visit ?

Y N8000

Route Description

From 2 mi up Quartz Hill Road from Hwy 43 - 8 miles to
 Top of Vipond Peak.

Distance: 8 miles

Means of travel:

(auto, ski, etc.)

Start time:

Finish time:

Weather (at end of survey)

Temperature: 25°Cloud cover: NoneSnow depth: 3-5'Precipitation (describe): NoneWind: Gust to 10-15 mph

Species encountered (if any, use Owl Observation Form)

species	#
<u>Sawwhet</u>	<u>1</u>

OWL OBSERVATION FORM

Party Members

P. Mullen
P. Olsen

Date 4/17/89

Route Name Quartz Hill

Repeat Observation ? Y ☒ N

Species Saw whet Number present 1 Time 2230
to 2240

Location:

Township 15 Range 10W Section 30 1/4 S.E Elev 6000
UTM (Optional) 35310E 50641N Slope 52% Aspect W
County: Beaverhead Forest: Beaverhead
Drainage: Quartz Gulch District: Wise River

Describe Observations: (bark, territorial call, sighting, etc.)

Reported calling in response to Boreal playback

Describe Location:

1 1/4 mile down Quartz Hill Road from Quartz Hill mine/camp
on East side just above creek 200M.

Describe Habitat: (canopy cover, comm. type, stand age, etc.)

Douglas Fir / ABRA - mature above creek

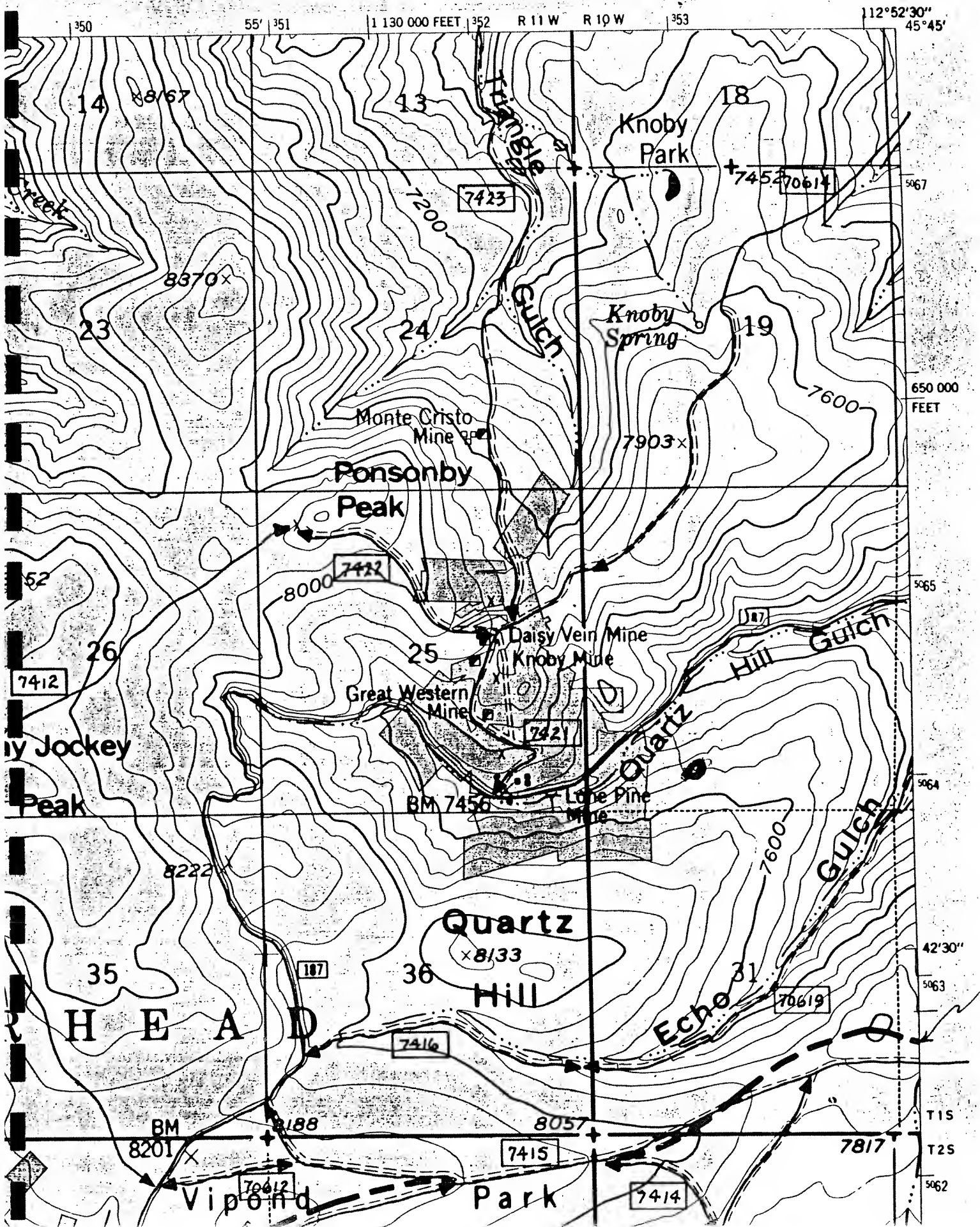
Describe Land use/management:

U.S.F.S

Comments:

VIPOND PARK N.W. QUAD.

10 & 11



SURVEY REPORT FORM

Party Members

P. MullenDate 5/6/89

Target Species

(if any)

Snowshoe

Route Name

Jerry Creek

Route location:

County BeaForest BeaverheadDrainage Jerry CrElevation 6000District Wise River

Repeat Visit ?

Y DN6200

Route Description

From Jerry Cr Road Jct off Hwy 43. 6 miles up Jerry Creek RoadDistance: 6 miMeans of travel: Auto

(auto, ski, etc.)

Start time: 2020Finish time: 2150

Weather (at end of survey)

Temperature: 30°Cloud cover: 30%Snow depth: 2'Precipitation (describe): NoneWind: Light

Species encountered (if any, use Owl Observation Form)

species

#

G. Horned 1

SURVEY REPORT FORM

Party Members

P. MullenDate 5/22/89

Target Species

(if any)

sawwhet

Route Name

Highway 43

Route location:

County BeaverheadForest BeaverheadDrainage Big HoleElevation 6100District Wise River

Repeat Visit ? Y N

Route Description

From Mullen Ranch on Highway 43 to Ralston Ranch
on Highway 43. Along Big Hole River

Distance: 8 miMeans of travel: Auto

(auto, ski, etc.)

Start time: 2220Finish time: 2340

Weather (at end of survey)

Temperature: 30°Cloud cover: ClearSnow depth: 2-4'Precipitation (describe): NoneWind: Gusty 70 10 mph

Species encountered (if any, use Owl Observation Form)

species

#

Gr. Cray 1 (incidental visual - no calling)

OWL OBSERVATION FORM

Party Members

P. Mullen

Date 5/02/89

Route Name Hwy 43

Repeat Observation ?

Y

☒ N

Species

Gr. Gray

Number present

1

Time

1730

to

Location:

Township 1N Range 12W Section 14 1/4 SE

Elev 5660

UTM (Optional) 34QBE 507713N

Slope 0

Aspect 0

County: Beaverhead

Forest: Beaverhead

Drainage: Big Hole

District: Wise River

Describe Observations: (bark, territorial call, sighting, etc.)

Sighting - Owl Perched on Roadside Reflector Post Near
Hwy 43

Describe Location:

1/4 mile WEST of 'Glaus Ranch' on Hwy 43 Approx 4 miles
Wise River.

Describe Habitat: (canopy cover, comm. type, stand age, etc.)

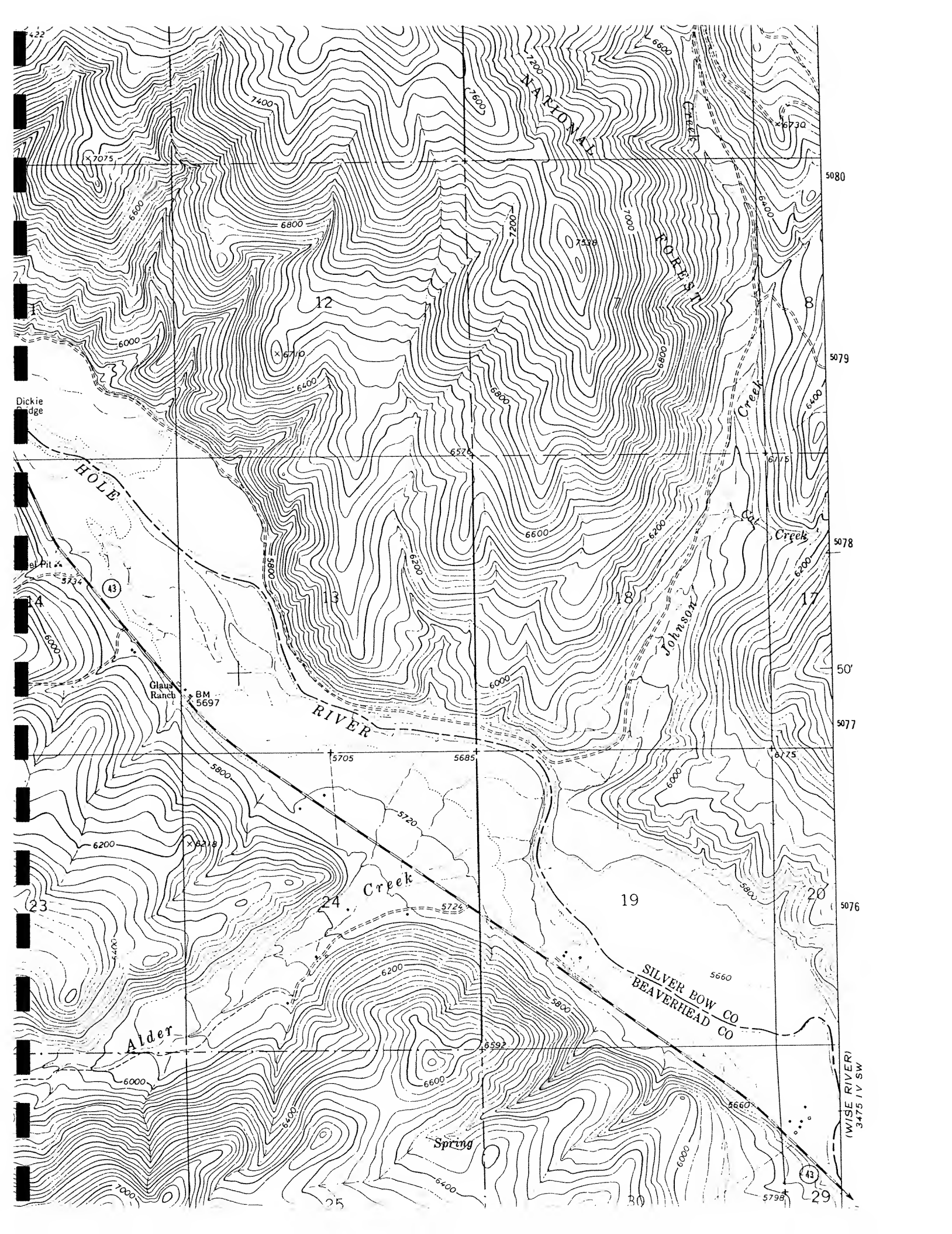
Aspen / willow Stand on slope south of road -
Grass Hay Field on North of Road 1/4 - 1/2 mile W WISE RIVER.

Describe Land use/management:

Private - cattle

Comments:

Dickie Hills QUADRANGLE



SURVEY REPORT FORM

Party Members

P. MullenB. CostainDate 5/04/89

Target Species

(if any)

Gr GrayBoreal

Route Name

Upper Johnson

Route location:

County BeaverheadForest BeaverheadDrainage Johnson Cr.

Elevation _____

District Western

Repeat Visit ?

☒ ☐

Route Description

From Maybee Meadows on Johnson/TTB Cr. Road off Hwy 43. - to Shultz creek. ~~7.5~~

Distance: 6 milesMeans of travel: Auto

(auto, ski, etc.)

Start time: 2045Finish time: 2200

Weather (at end of survey)

Temperature: 40°Cloud cover: 80%Snow depth: 2'Precipitation (describe): ScatteredWind: 5-10 mphRain

Species encountered (if any, use Owl Observation Form)

species #

None

OWL OBSERVATION FORM

Party Members

Date 4/14/09

Route Name

P. Mullen
L. Mullen

Repeat Observation ?

(N) D. Gent

Species Snowy owl

Number present 1

Time 2
to 4

Location:

Township 1S Range 19W Section 27 1/4 S.E Elev 6

UTM (Optional) 272.2E 5067.0N Slope 50% Aspect

County: Ravalli

Forest: Bitterroot

Drainage: Camp Creek

District: Sula

Describe Observations: (bark, territorial call, sighting)
calling repeatedly

Describe Location:

Below Road 3.7 miles from Lost Trail Pass on Sula

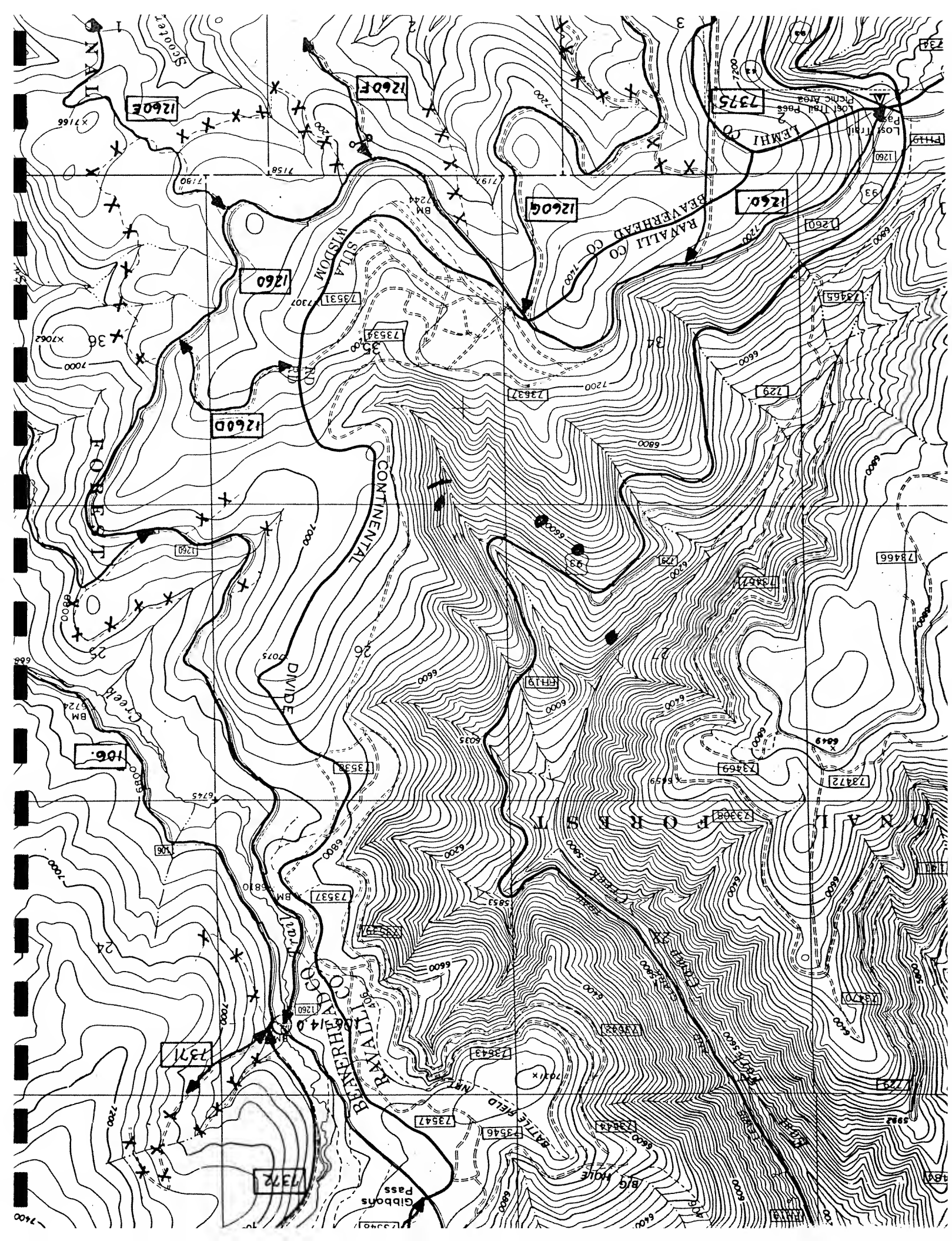
Describe Habitat: (canopy cover, comm. type, stand age,
Spruce/Fir - Mature - Creek Bottom Area

Describe Land use/management:

U.S.F.S.

Comments:

LOST TRAIL PASS QUADRANGLE



SURVEY REPORT FORM

Party Members

P. Mullen, L. Mullen

J. CASLEY

G. CASLEY

Date 2-24-89

Route Name

TRIANGLE

Target Species

(if any)

Bored

GREAT Horned etc.

Route location:

County Beaverhead

Forest Beaverhead

Drainage TRIANGLE

Elevation 5800-7000

District Wise River

Repeat Visit ?

Y (N)

Route Description

From U.S. Highway [#]43 at Jerry Creek Fishing Access, south up TRIANGLE Gulch past Daisy vein, Monte Cristo Mine operate to QUARTZ Hill Road. West Around Krobby Park, South to Vipond Park.

Distance: Approx 11 mi

Start time: 1940

Means of travel: Snow mobile
(auto, ski, etc.)

Finish time: 2330

Weather (at end of survey)

Temperature: 30°

Cloud cover: 60%

Snow depth: 4-6 ft.

Precipitation (describe): scattered snow
Wind: Variable to 15 mph.

Species encountered (if any, use Owl Observation Form)

species #

NONE

SURVEY REPORT FORM

Party Members

P. Mullen

J. Promozic

Date 2/27/89

Route Name

Howell CR.

Target Species

(if any)

Boreal

Great BRAY

Route location:

Drainage Thompson Cr.

County Beaverhead

Elevation 6500'

Forest Beaverhead

District Wisdom

Repeat Visit ? Y NO

Route Description

From Pinklar Lake Road off of North Big Hole Road to Howell Cr., East Fork Thompson Cr., ending in Clam Valley.
7

Distance: 10 miles

Means of travel: Snow Mobile
(auto, ski, etc.)

Start time: 1930

Finish time: 2300

Weather (at end of survey)

Temperature: 20°F

Cloud cover: clear

Snow depth: 5 ft

Precipitation (describe): None
Wind: Light - Variable

Species encountered (if any, use Owl Observation Form)

species #

None

SURVEY REPORT FORM

Party Members

P. Mullen
J. Pranzic

Date 3-1-89

Route Name

WISE RIVER ROAD

Target Species

(if any)

SEROTIN
GRAY GRAY

Route location:

Drainage Wise River

County Beaverhead Forest Beaverhead

Elevation 6000-7800 District Wise River

Repeat Visit ? Y (N)

Route Description

From PATENGAIL CR ROAD (closure Area) up Wise River Road following New Construction to Mono Park - District Boundary.

Distance: 15 miles

Means of travel: Snow Mobile
(auto, ski, etc.)

Start time: 1930

Finish time: 2330

Weather (at end of survey)

Temperature: 20°

Cloud cover: 60%

Snow depth: 4-6'

Precipitation (describe): NONE

Wind: Light Variable.

Species encountered (if any, use Owl Observation Form)

species #

NONE

SURVEY REPORT FORM

Party Members

P. MullenJ. PromozieDate 3/06/89

Target Species

(if any)

ALL

Route Name

TRAPPER CR.

Route location:

County BeaverheadForest BeaverheadDrainage TRAPPERElevation 4500-6500District Wise RiverRepeat visit ? ☒ N

Route Description

From GLENDALE TO Hecht Mine AREA ON TRAPPER
CREEK ROAD.

Distance: 9 MILESStart time: 1930

Means of travel: snowmobile
(auto, ski, etc.)

Finish time: 2300

Weather (at end of survey)

Temperature: 35° FPrecipitation (describe): NoneCloud cover: ClearWind: LightSnow depth: 4-5 ft.

Species encountered (if any, use Owl Observation Form)

species #

NONE

SURVEY REPORT FORM

Party Members

P. Mullen
L. Mullen
J. Parnozie

Date 3/03/89

Route Name

TRAPPER CR.

Target Species

(if any)

ALL

Route location:

County Beaverhead Forest Beaverhead

Drainage TRAPPER Elevation 4500-6000 District Wise River

Repeat Visit ? Y (N)

Route Description

From town of GLENDALE ON TRAPPER/CANYON CR. ROAD
up TRAPPER CREEK TO HECLA MINE AREA.

Distance: 9 MILES

Means of travel: SNOW Mobile
(auto, ski, etc.)

Start time: 1930

Finish time: 2200

* see comments

Weather (at end of survey)

Temperature: -10°F

Cloud cover: clear

Snow depth: 4-5 ft

Precipitation (describe): NONE

Wind: NONE

Species encountered (if any, use Owl Observation Form)

species #

NONE.

* TOO COLD FOR SAFETY.

SURVEY REPORT FORM

Party Members

P. Muller
J. Prunozic

Date 3-15-89

Route Name

LaMarche Creek

Target Species

(if any)

Boreal

Anything

Route location:

Drainage LaMarche

County Deer Lodge

Elevation 6200

Forest Beverly

District Upper River

Repeat Visit ? Y ☒

Route Description

From Seymour Bridge on Highway #274, ~~9~~, up Seymour Lake Road 3.5 miles to East Fork LaMarche Creek Road. Travel begins To End of Road.

Distance: 8 miles

Means of travel: snow machine
(auto, ski, etc.)

Start time: 1930

Finish time: 2200

Weather

Temperature: 20°

Cloud cover: 100%

Snow depth: 3-5 ft

Precipitation: snow

Wind: Heavy

Species encountered (if any, use Owl Observation Form)

species	#
<u>None.</u>	

SURVEY REPORT FORM

Party Members

P. Mulken

S. Promozic

Date 3/16/89

Route Name

Fishtrap

Target Species
(if any)

Breed

Anything

Route location:

Drainage Fishtrap Cr.

County Deer Lodge

Elevation 6300

Forest Beverly

District White River

Repeat Visit ? Y (N)

Route Description

From Highway #43 up Mudd Creek Road to Fishtrap
creek turnoff. Travel 8 miles down Fishtrap Road.

Distance: 8 miles

Means of travel: snow Mobile
(auto, ski, etc.)

Start time: 1930

Finish time: 2230

Weather

Temperature: 20°

Cloud cover: 100%

Snow depth: 3-5 ft

Precipitation: Snow

Wind: Gustly

Species encountered (if any, use Owl Observation Form)

species #

None

SURVEY REPORT FORM

Party Members

P. Mullen
J. Pramezie

Date 3-20-89

Target Species
(if any)

Route Name

Doodittle

Boreal
Great Gray

Route location:

Drainage Doodittle Cr.

County Beaverhead

Forest Beaverhead

Elevation 6200-7500

District Wisdom

Repeat Visit ? Y (N)

Route Description

up ^{#43} Doodittle Rd. of Highway 93, 8 miles up North Fork of
Doodittle Rd.

Distance: 8 miles

Start time: 1930

Means of travel: Snow Mobile
(auto, ski, etc.)

Finish time: 2245

Weather (at end of survey)

Temperature: 20°

Precipitation (describe):

Cloud cover: Clear

Wind: Light

Snow depth: 4 ft.

Species encountered (if any, use Owl Observation Form)

species #

None

Comments: Two miles up North Fork Doodittle
Road from Forest Boundary -
Heard probable female Boreal Caroller
(owl) Bark - Reported 3 TIMES,

SURVEY REPORT FORM

Party Members

P. Mulhen

J. Promozie

Date 3-21-89

Route Name

STEEL-FOX

Target Species

(if any)

Boreal

Great Gray

Route location:

County Beaverhead

Forest Beaverhead

Drainage STEEL Cr.

Elevation 6200-6400

District Wisdom

Repeat Visit ? Y CP

Route Description

From Highway # 43 at Wisdom up steel Creek Road
to Forest Boundary Begin Route along Road # 33.

Distance: 9 miles

Means of travel: Snow Mobile

(auto, ski, etc.)

Start time: 1930

Finish time: 2300

Weather

Temperature: 30°

Cloud cover: Partly

Snow depth: 2-4 ft.

Precipitation: None

Wind: Busy

Species encountered (if any, use Owl Observation Form)

species #
Great Horned 1

SURVEY REPORT FORM

Party Members

P. Mullen

L. Mullen

Date 3-24-89

Route Name

Hawell Creek

Target Species

(if any)

Boreal

Great Gray

Route location:

Drainage Hawell Creek

County Beaverhead

Forest Beaverhead

Elevation 6300-7000

District Wishram

Repeat Visit ? ☒ N

Route Description

From Pintler Creek Road at Hawell Creek Rd Jct. 8 miles to East Fork Thomson Creek Gate.

Distance: 8 miles

Means of travel: Snow Machine
(auto, ski, etc.)

Start time: 1930

Finish time: 2230

Weather

Temperature: 30°

Cloud cover: partly

Snow depth: 5ft

Precipitation: None

Wind: None

Species encountered (if any, use Owl Observation Form)

species #

Sawwhet 1

Great Horned 2

(Possible Great Gray 1)

OWL OBSERVATION FORM

Party Members

P. Mullen
L. Mullen

Date

3/24/84

Route Name

Howell Cr.

Repeat Observation ?

Y

N

Species

Saw Whet

Number present

1

Time

1920

to

1950

Location:

Township 1N Range 15W Section 19 1/4 SE

Elev 66

UTM (Optional) 5076.8N 30513 E

Slope 10%

Aspect 110

County: Beaverhead

Forest: Beaverhead

Drainage: EAST Fork Thompson Cr.

District: Wisdom

Describe Observations: (bark, territorial call, sighting, etc.)

At Dusk. Owl Began calling in response to Broadcast Call/Tape continued until Dark when we moved on.

Describe Location:

Conifer stand above Thompson Creek 70 N.W. 50 m E from
Mystic Lake Trail Head on Howell Cr. Road.

Describe Habitat: (canopy cover, comm. type, stand age, etc.)

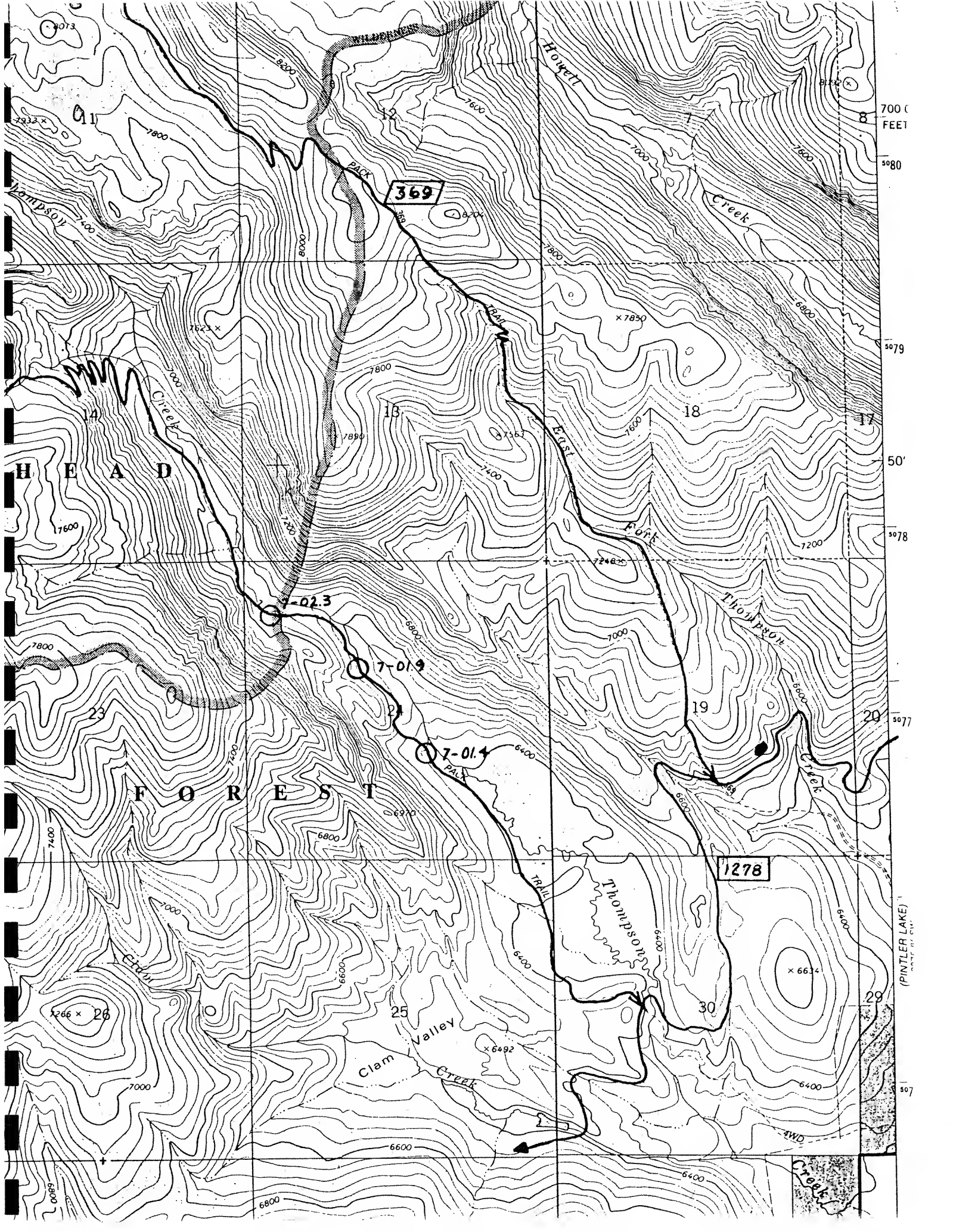
Mature Lodgepole stand (30m) surrounded by Sagebrush
Bunchgrass/aspens Meadows, 50 m from Thompson Creek.

Describe Land use/management:

U.S. FIS,

Comments:

Musseybrook Lake QUADRANGLE



700 (FEET

5080

5079

50'

5078

5077

(PINTLER LAKE)

507

SURVEY REPORT FORM

Party Members

P. McAllenJ. Promozio★ J. Jones - May (3rd)Date 3/27/89

Target Species

(if any)

Route Name

Big Hole PassBeaver

Route location:

County BeaverheadForest BeaverheadDrainage SwampElevation 6500-7500District WISDOMRepeat Visit ? Y ON

Route Description

From Forest Road on Big Hole / Grantsville Rd -
8 Miles up Road -

Distance: 8 MilesStart time: 1730

Means of travel: Spencer Mobile
(auto, ski, etc.)

Finish time: 2230

Weather (at end of survey)

Temperature: 30°Precipitation (describe): NoneCloud cover: 20%Wind: slight - gusts at
timesSnow depth: 4"

Species encountered (if any, use Owl Observation Form)

species

#

Great Horned Owl 1

SURVEY REPORT FORM

Party Members

Buttaller
W. R. ...

Date 3-29-89

Route Name

Lick Creek

Target Species

(if any)

Boreal/Scrub

Route location:

Drainage Lick Cr.

County Davall

Forest Bitterroot

Elevation 5600-7000 District SWLA

Repeat Visit ? Y N

Route Description

From ... road ... Lick Creek ... 11.5 miles to Lick Creek Saddle.

Distance: 11.5 mi

Start time: 1930

Means of travel: Simon McGee
(auto, ski, etc.)

Finish time: 2140

Weather (at end of survey)

Temperature: 25°

Precipitation (describe): Variable

Cloud cover: 50%

Wind: Light-Variable

Snow depth: 1"

Species encountered (if any, use Owl Observation Form)

species #

Saw whet 1

Female Boreal Bawk ? - 3x

GROUND COVER (two-digit codes)

Enter cover class code for each of the following types of ground cover:

- S - bare soil (particles < 1/16 in. dia.)
- G - gravel (particles 1/16 to 3 in. dia.)
- R - rock (particles > 3 in. dia.)
- L - litter and duff. Litter includes freshly-fallen leaves, needles, twigs, bark, fruits; duff is fermentation layer and humus layer.
- W - wood (downed fragments > 1/4 in. dia.)
- M - moss. Also includes Lycopodium and Selaginella.
- BV - basal vegetation. This is the area occupied by root crowns and stems, not canopy cover. Values rarely exceed 30% and are usually lower.
- O - other. Use when an additional category is needed. Identify the "other" item (e.g., lichen; water).

Use the following cover classes and codes:

Code	Class	Midpoint
0	0%	0%
1	< 1%	0.5%
3	1% to 4.9%	3%
10	5% to 14.9%	10%
20	15% to 24.9%	20%
30	25% to 34.9%	30%
40	35% to 44.9%	40%
50	45% to 54.9%	50%
60	55% to 64.9%	60%
70	65% to 74.9%	70%
80	75% to 84.9%	80%
90	85% to 94.9%	90%
98	95% to 100%	97.5%

T = for very small cover (e.g., < .1%)

RIPARIAN FEATURES

If the plot is within the riparian zone record the following information (indicate units of measurement as appropriate):

Channel Width (up to three-digit number) - if valley contains multiple channels, give width of channel nearest to the plot.

Channel Entrenchment (up to three-digit number) - depth to which channel has cut into valley floor.

Surface Water (two-digit code) - estimate of maximum ground cover of surface water on plot during the year (use cover classes listed above under "Ground Cover").

Height Above Water (up to three-digit number) - height of plot above stream or pond surface when water is at bank-full stage (water at bank-full stage reaches lower limit of terrestrial vegetation).

Distance from Water (up to three-digit number) - distance from water at bank-full stage to nearest plot edge.

GENERAL SITE DESCRIPTION

Description (a "word picture") of the place where the sampled community occurs. (Any specific information about the plot itself should be written into the "Comments" field following the "Ocular Plant Species Data"). Consider the setting of the community occurrence in the surrounding landscape (including landscape features and adjacent community types).

OCULAR PLANT SPECIES DATA

This portion of the form is used for recording plant species data by lifeform class, i.e., "Trees", "Shrubs", "Graminoids", and "Forbs".

For all cover estimates, use the codes from the following cover class table:

<u>Code</u>	<u>Class</u>	<u>Midpoint</u>
1	< 1%	0.5%
3	1% to 4.9%	3%
10	5% to 14.9%	10%
20	15% to 24.9%	20%
30	25% to 34.9%	30%
40	35% to 44.9%	40%
50	45% to 54.9%	50%
60	55% to 64.9%	60%
70	65% to 74.9%	70%
80	75% to 84.9%	80%
90	85% to 94.9%	90%
98	95% to 100%	97.5%

T = for very small cover (e.g., < .1%)
PltIDL (two-digit code)

Plant Identification Level - enter the two-digit number that represents the percent of canopy cover equal to or greater than which all plants are to be identified. For example, "5" indicates that all plant species having 5% canopy cover or greater would be recorded; "0" indicates all plant species have been recorded.

Tot Cv (two-digit code)

Total Cover - estimate the percent canopy cover for the respective lifeform. This estimate is not the sum of all species in the lifeform and does not count overlap. It is the horizontal percent cover of the vertical projection of the lifeform.

Tal Cv (two-digit code)

Tall Height Cover - estimate "Total Cover" (as described above) by life form for individuals taller than 5 m (16.4 ft).

Med Cv (two-digit code)

Medium Height Cover - estimate "Total Cover" (as described above) by life form for individuals between 0.5 and 5 m tall (1.6 - 16.4 ft).

Low Cv (two-digit code)

Low Height Cover - estimate "Total Cover" (as described above) by life form for individuals between 0.05 and 0.5 m tall (0.2 - 1.6 ft).

Grd Cv (two-digit code)

Ground Height Cover - estimate "Total Cover" (as described above) by life form for individuals shorter than 0.05 m (0.2 ft).

MHt (three-digit code)

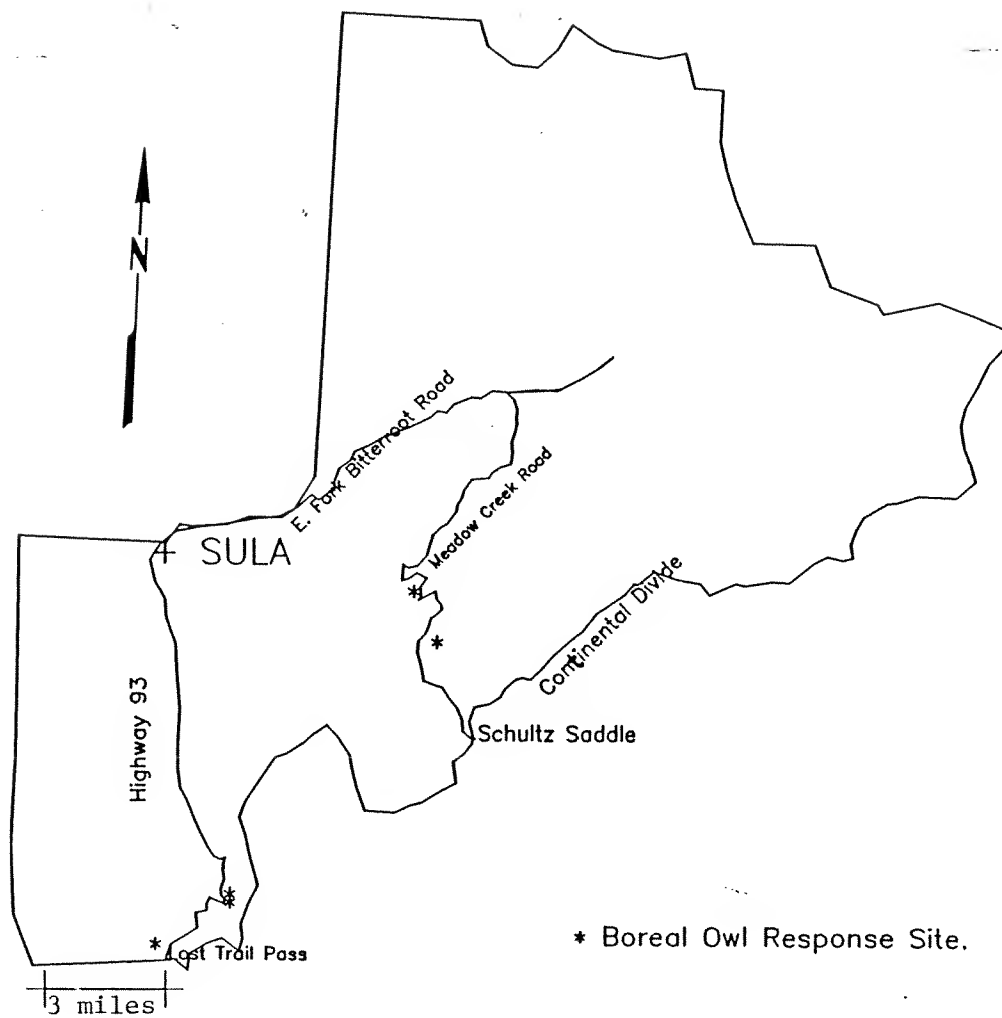
Mean Height - estimate the mean height of the dominant size class within the respective lifeform. Indicate units of measurement.

CC (two-digit code)

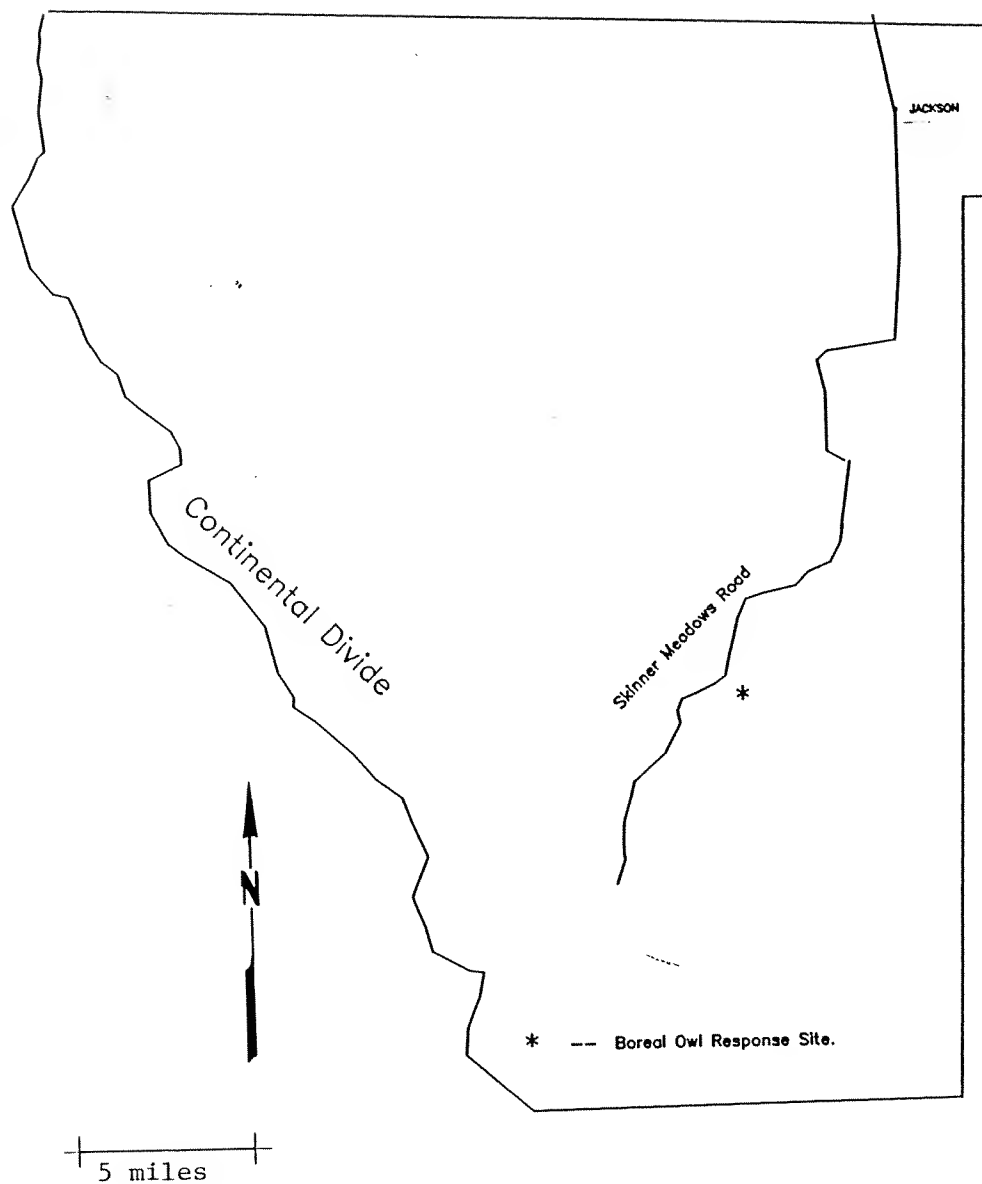
Canopy Cover - enter the appropriate canopy cover code listed above for each species in each lifeform.

APPENDIX II

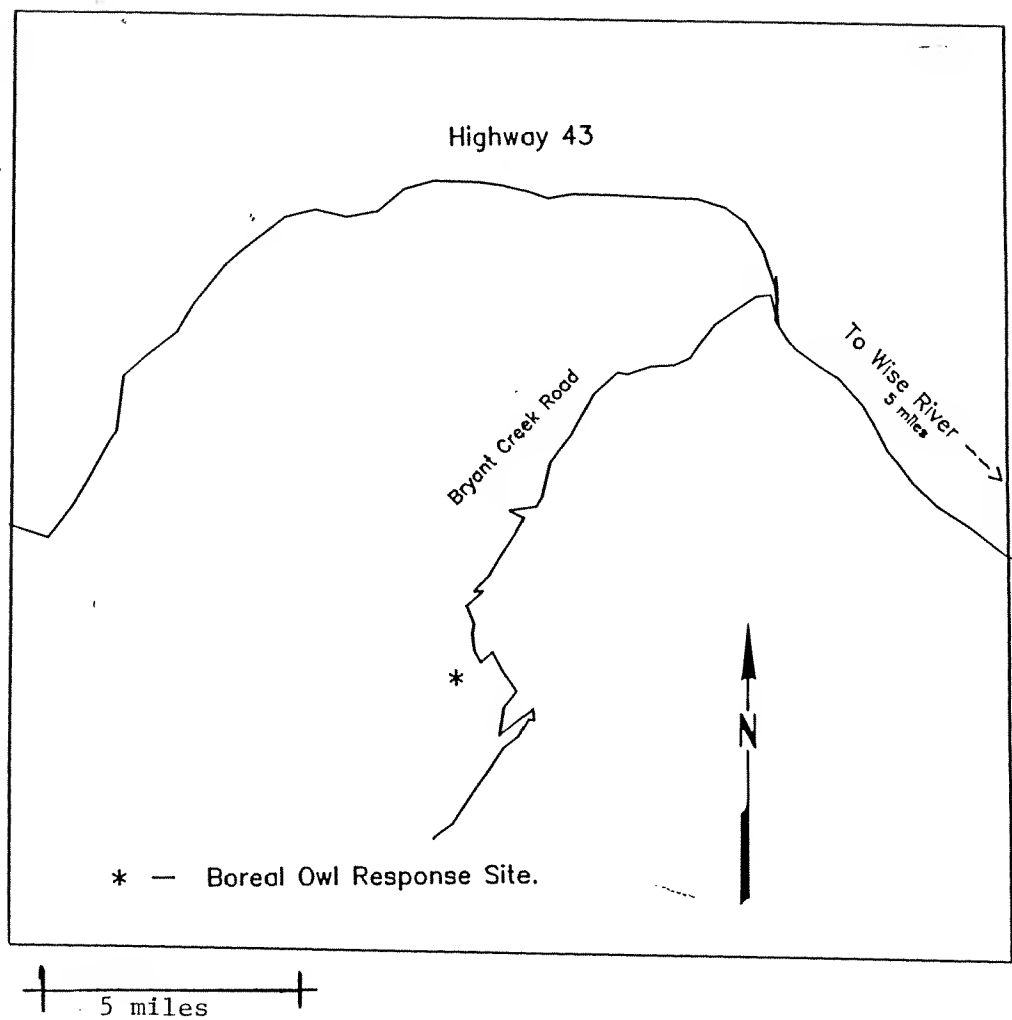
Boreal Owl Response Site maps.



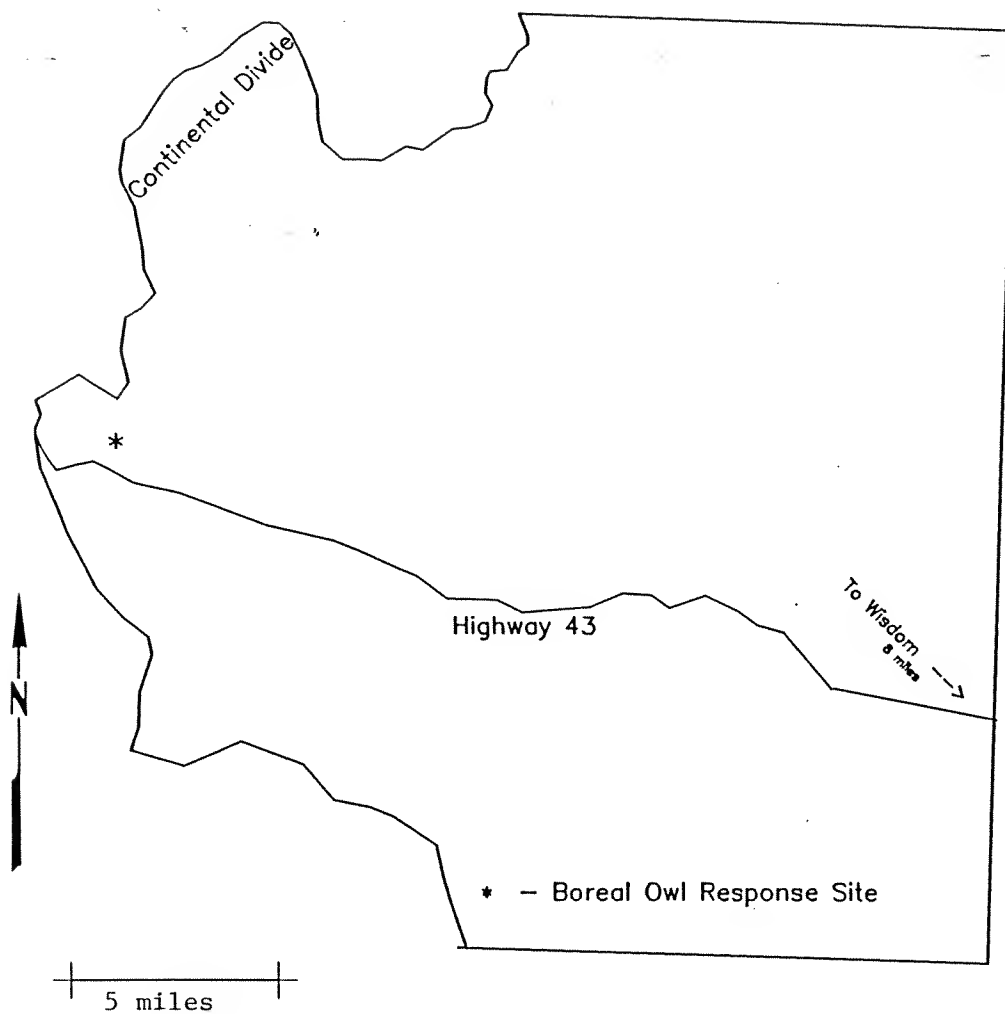
Site map for Lost Trail Pass, Meadow Creek, and Gibbons Pass survey routes.



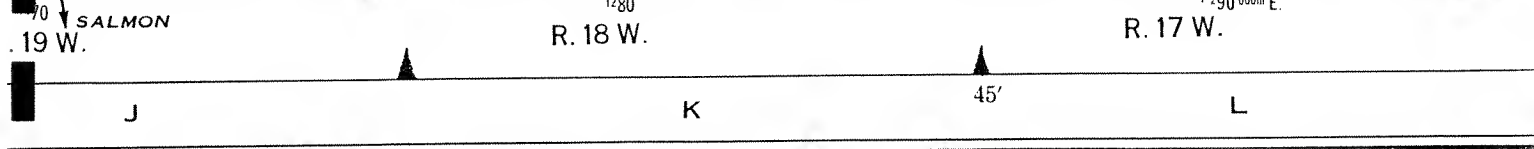
Site map for Skinner Meadows survey route.



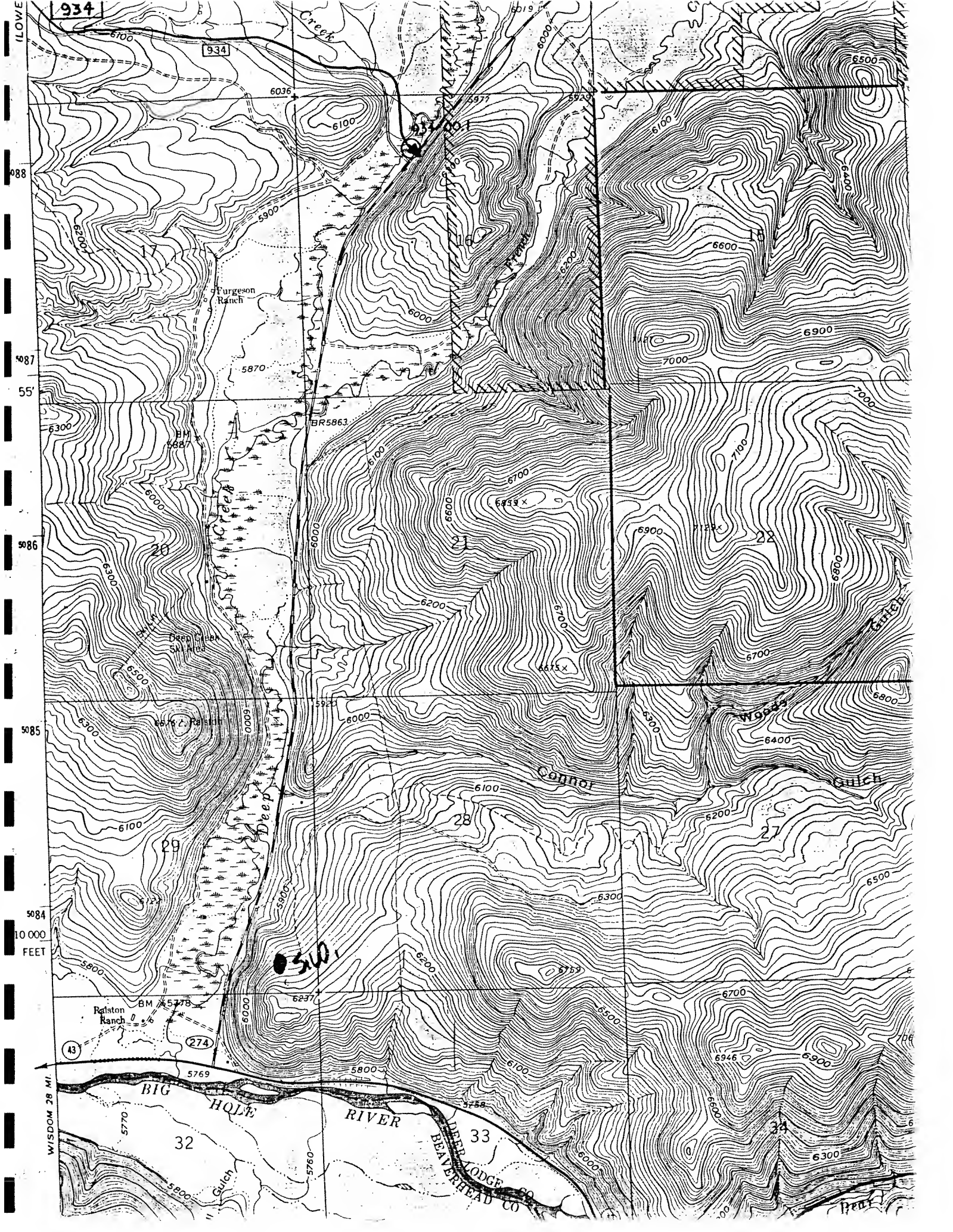
Site map for Bryant Creek survey route.



Site map for Chief Joseph Pass survey Route.







LOWE

588

587

586

585

584

10 000

FEET

WISDOM 28 MI.

934

934

Ferguson Ranch

BM 5887

BR 5863

Deep Creek

Palston Ranch

Palston Ranch

BM 5778

274

32

RIVER

33

BEAVER LODGE

CO

6500

6600

6900

7000

6700

6800

6900

7000

7100

7200

7300

7400

7500

7600

7700

7800

7900

8000

8100

8200

Woods

Gulch

27

28

29

30

31

32

33

34

35

APPENDIX III

Completed Survey Report and Owl Observation Forms.

OWL OBSERVATION FORM

Party Members

P. Mullen
J. PizozicDate 3-29-89Route Name Lick Creek

Repeat Observation ?

Y

(N)

Species

Sawwhet

Number present

1

Time

2120

to

2130

Location:

Township 2N Range 17W Section 10 1/4 SW Elev 6000UTM (Optional) _____ Slope 0 Aspect 0County: Ravalli Forest: ButterootDrainage: Lick Creek District: Sula

Describe Observations: (bark, territorial call, sighting, etc.)

Rapid staccato, continual call approx 1 min. in duration

Describe Location:

Approx. 3.9 miles from Lick Creek Saddle
on Lick Creek Road - on North side of Road - 50m.Road runs along Ridge/Saddle complex here & Topography is flat

Describe Habitat: (canopy cover, comm. type, stand age, etc.)

young largepole/Alpine fir, Fairly open with large clear cut
directly to North - Below Stand. Small creek area to South across
road.

Describe Land use/management:

USFS - cutting units numerous.

Comments:

LICK CREEK QUAD?